

1 CLAIMS:

2 What is claimed, is:

3 (1) A sound source localization system comprising:

4 a sound reflecting element for generating a delay
5 ~~deformation~~ information corresponding to a relative position
6 between a sound source and sound collecting means;

7 a storage part for storing the acoustic data collected via
8 said sound reflecting element; and

9 a sound source localization part for acquiring a sound
10 source position, employing the acoustic data on which said
11 delay ~~deformation~~ information is superposed.

12 (2) The sound source localization system according to claim
13 1, wherein said sound reflecting element is formed as a
14 spheroid associated with the relative position between the
15 sound source and sound collecting means to generate said
16 delay ~~deformation~~ information intrinsic to said relative
17 position.

18 (3) The sound source localization system according to claim
19 1, wherein said sound source localization part comprises a

1 standard template storage part for storing a standard
2 template containing an intrinsic delay ~~deformation~~
3 information generated by a white noise sound source, a
4 background noise template storage part for storing a
5 background noise template, a residual generation part for
6 calculating a residual from said acoustic data, employing
7 said standard template and said background noise template,
8 and a selection part for selecting the standard template
9 giving the least residual, employing the generated residual.

10 (4) The sound source localization system according to claim
11 3, wherein said standard template storage part stores the
12 standard template and the sound source position giving said
13 standard template in association.

14 (5) The sound source localization system according to claim
15 1, wherein said sound source localization system comprises
16 at least one sound reflecting element, and simultaneously
17 acquires positional data of the sound source including a
18 range to the sound source, an azimuth and an elevation as
19 said relative position.

20 (6) A sound source localization method for acquiring the
21 position of a sound source under the control of an
22 information processing apparatus, said method comprising:

1 a step of collecting the acoustic data with a delay
2 ~~deformation~~ information superposed corresponding to a
3 relative position between a sound source and sound
4 collecting means;

5 a step of storing said collected acoustic data in a storage
6 part; and

7 a step of reading the acoustic data with said delay
8 ~~deformation~~ information superposed and acquiring said
9 relative position of said sound source designated by said
10 delay ~~deformation~~ information.

11 (7) The sound source localization method according to claim
12 6, wherein said delay ~~deformation~~ information is generated
13 by reflection from a spheroid associated with said relative
14 position between the sound source and sound collecting
15 means, and said delay ~~deformation~~ information is generated
16 intrinsic to said relative position.

17 (8) The sound source localization method according to claim
18 6, wherein said sound source localization step comprises a
19 step of reading out a standard template from a standard
20 template storage part for storing the standard template
21 containing a delay ~~deformation~~ information intrinsic to said
22 relative position generated by a white noise sound source, a

1 step of reading out a background noise template from a
2 background noise template storage part for storing the
3 background noise template, a step of calculating a residual
4 from said acoustic data, employing said standard template
5 and said background noise template, and a step of selecting
6 the standard template giving the least residual, employing
7 the generated residual.

8 (9) The sound source localization method according to claim
9 6, wherein said selection step comprises a step of referring
10 to the selected standard template and acquiring the sound
11 source position corresponding to said standard template.

12 (10) The sound source localization method according to claim
13 6, further comprising a step of simultaneously acquiring the
14 range, azimuth and elevation as said relative position from
15 said acquired sound source position to said sound source.

16 (11) A sound reflecting element for generating a delay
17 ~~deformation~~ information corresponding to a relative position
18 between a sound source and sound collecting means, wherein a
19 reflecting surface of said sound reflecting element has an
20 envelope made from a plurality of spheroids that are formed
21 by rotating a plurality of ellipses having the distance
22 between the focal points corresponding to the distance from
23 said sound source to said sound collecting means around an

1 axis connecting said focal points.

2 (12) The sound reflecting element according to claim 11,
3 wherein said plurality of ellipses are generated in relation
4 with the elevation between said sound source and said sound
5 collecting means and flatter as said elevation is greater.

6 (13) The sound reflecting element according to claim 11,
7 wherein said reflecting surface is formed as an enveloping
8 surface of said plurality of spheroids that are generated by
9 rotating a corresponding ellipse around the axis connecting
10 said focal points.

11 (14) A formation method of a sound reflecting element
12 comprising:

13 generating ~~a delay deformation~~ information corresponding to
14 a relative position between a sound source and sound
15 collecting means;

16 a step of generating a plurality of spheroids by rotating an
17 ellipse having the distance between the focal points
18 corresponding to the distance from said sound source to said
19 sound collecting means around an axis connecting said focal
20 points; and

1 a step of forming a reflecting surface by generating an
2 enveloping surface of said plurality of spheroids.

3 (15) The formation method of the sound reflecting element
4 according to claim 14, wherein said plurality of ellipses
5 are generated in relation with the elevation between said
6 sound source and said sound collecting means and flatter as
7 said elevation is greater.